Revue suisse Zool.	Tome 98	Fasc. 2	p. 261-268	Genève, juin 1991

A new species of *Staphylepis* Spassky & Oshmarin, 1954 (Cestoda: Hymenolepididae) found in West African nectariniid birds.

by

J. MARIAUX [1]* and C. VAUCHER **

With 7 Figures

ABSTRACT

We describe *Staphylepis ambilateralis* (Cestoda, Hymenolepididae) a new species parasitizing sunbirds of the Ivory Coast. This species is characterized by an absence of a rostellum. Surprisingly the closest species to *S. ambilateralis* is *S. inhamata* (Rietschel, 1934) which has been found in South American Trochilidae (Hummingbirds). We have found *S.ambilateralis* in sunbirds only at low intensities and prevalences. Furthermore a seasonal cycle, with a peak during the summer, occurs. These observations may help to explain the small number of parasite species known from this family of hosts until now.

As part of our study of bird cestodes of the Ivory Coast, we have studied a large number of sunbirds (Family Nectariniidae). Until now, few tapeworm species have been found in this family of birds. To our knowledge, they are: – *Anonchotaenia globata* cited by YAMAGUTI (1959). – *Biuterina ugandae* described by BAYLIS (1919) in Uganda and refound by HUDSON (1934). – *Ophryocotyloides bhaleraoi* Inamdar, 1944 in India. – *Allohymenolepis mitudori* and *A. palawanensis* from the Philippines (DEARDORFF *et al.* 1976, 1978). A *Hymenolepis sp.* was reported from Borneo by BURT (1969) and was characterized by an armed rostellum.

---

* Institute of Zoology, University of Neuchâtel, Chantemerle 22, CH-2007 Neuchâtel, Switzerland.

** Museum of Natural History, P.O. Box 434, CH-1211 Geneva 6, Switzerland.

[1] This work is a part of the first author's thesis

We have discovered three Cestodes species in these birds with very low prevalences and intensities: A Dilepididae with unarmed scolex, a *Raillietina* and a Hymenolepididae. This last taxon only can be satisfactorily described.

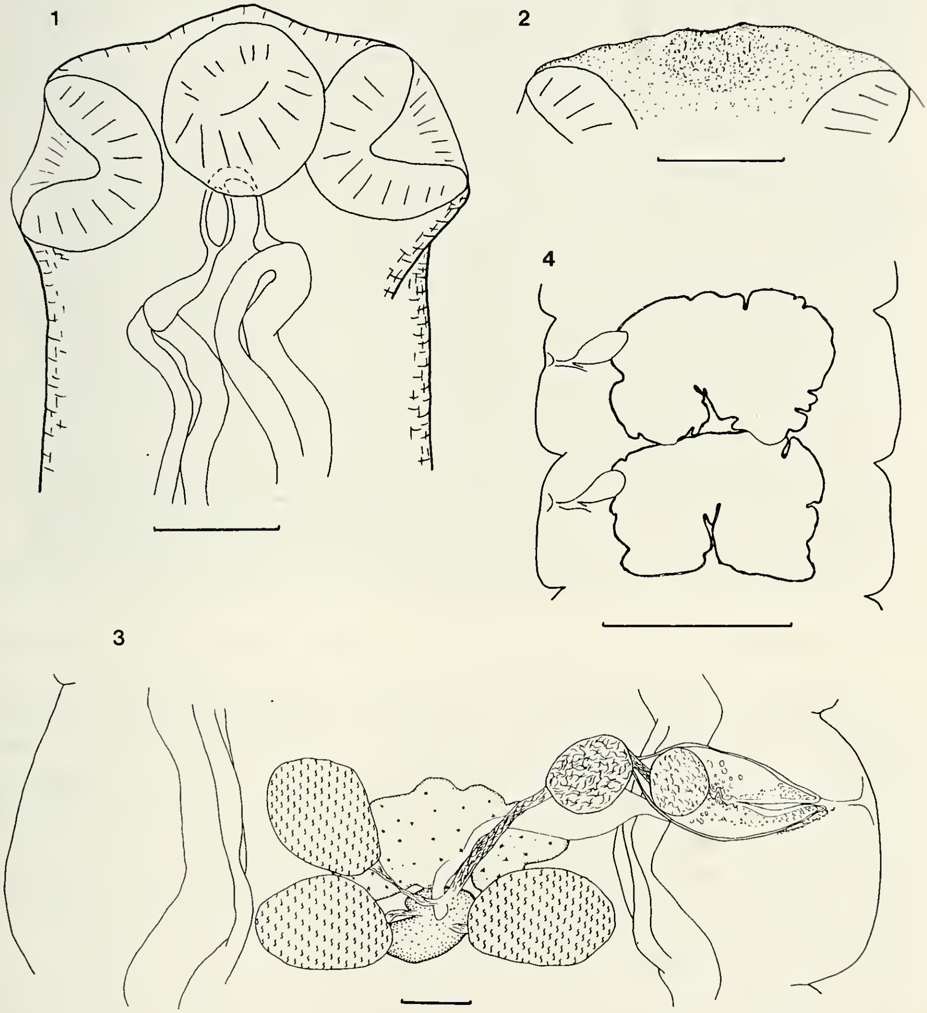
MATERIALS & METHODS

Birds are caught with mist nests and examined just after their death. Cestodes are fixed with hot 5% formalin and stained with alcoholic hydrochloric carmine. Observations are made in light microscopy (normal or Nomarsky). Eggs are observed in Faure's medium after dissection of the uterus. Our methods are described more in detail in previous papers (MARIAUX & VAUCHER 1988, 1990).

List of localities: Adiopodoumé: 5° 19' N-4° 06' W, 20 Km W of Abidjan. Dabou: 5° 19' N - 4° 19' W, 40 Km W of Abidjan. Lamto: 6° 13' N - 5° 01' W, 150 Km NW of Abidjan. Taabo: 6° 14' N - 5° 04' W, 10 Km N of Lamto.

Staphylepis ambilateralis n. sp.

DESCRIPTION: Hymenolepididae, Hymenolepidinae. Worm of medium size. Scolex globular, not clearly separated from neck. Suckers circular and unarmed. Apex of scolex with compacted parenchyme, resembling a glandular zone in place of rostellum and rostellar pouch. Integumentary irregularities in front of this structure (Figs 1–2). Proglottides broader than long. Genital pores unilateral on left or right side of body. Genital ducts dorsal to excretory stems. Testes three, dorsal; one poral, posterior; two antiporal, tandem. Cirrus pouch oval, well developed, overreaching longitudinal excretory ducts. Cirrus straight in pouch, possessing strong wall and surrounded with glandular cells. Cirrus and genital atrium unarmed. Round and small internal seminal vesicle in back of pouch. External seminal vesicle usually not well developed, often completely empty. Vagina always posterior to cirrus pouch but sometimes partially superposed to it in its terminal part. Seminal receptacle oval, approximately central, ventral to external seminal vesicle. Ovary ventral, central and massive. Oval vitelline gland postovarian (Fig. 3). Rounded, young uterus appearing ventrally and anteriorly, slightly antiporally. Pregravid uterus generally horseshoe shaped with numerous marginal lobes forming an irregular border. Gravid uterus filling whole proglottis between excretory ducts (Fig. 4). Eggs rounded with smooth external shell. Embryophores oval, usually elongated and often showing small polar irregularities or protuberances. Oncospheres oval. No filaments on either outer membrane nor on embryophore surface. Embryonic hooks of equal size (Fig. 5). Empty postgravid proglottides often present.



Figs 1-4.

Staphylepis ambilateralis n. sp. 1) Scolex. Scale bar: 50 µm; 2) Detail of the apical part of the scolex. Scale bar: 50 µm; 3) Anatomy of mature proglottis. Scale bar: 50 µm; 4) Schematic view of the uterus Scale bar: 500 µm.

DIMENSIONS[1]: Length (max.): 3 cm; breadth (max.): 962; number of proglottides (max.) ~100; scolex: 150 (119–170) n=3; suckers: 63 (50–75), sd: 10.6, n=12; testes 100x69 (86–119x57–83), sd: 6.3, 5.5, n=44; cirrus pouch: 148x74 (125–173x54–95), sd: 13.7, 12.3, n=47; int. seminal vesicle: 53 (36–74), sd: 11.2, n=58; ext. seminal vesicle: usually 55x43 (45–65x30–56), sd: 7.1, 7.1, n=13, but rarely up to 95x77; ovary: 219x102 (174–263x78–129), sd: 12.2, 6.9, n=29; vitelline gland: 108x51 (87–129x38–63), sd: 4.6, 3.3, n=29; eggs: up to 86x68; oncospheres: 25x13 (23–29x11–17), sd: 1.7, 1.3, n=26; embryophores: 36x16 (31–43x13–23), sd: 2.6, 2.2, n=26; embryonic hooks: 10 (9–12), sd: 0.6, n=39.

MATERIAL: 10 specimens found in the intestine of 7 sunbirds (3 scoleces only). *Cinnyris cupreus* 17.7.85, Adiopodoumé and 25.9.85, Lamto. *Cinnyris chloropygius* 27.7.85, Adiopodoumé. *Cinnyris sp.* 10.8.85, Taabo and 30.9.85, Adiopodoumé. *Cyanomitra cyanolaema* 3.10.85, Dabou. *Cyanomitra olivacea* 20.7.85, Adiopodoumé.

Prevalence: 7/124 (5.6%) (Fig. 6).

Intensity: 0.08.

Etymology: The name *ambilateralis* refers to the fact that some specimens possess genital pores opening on the left side of the strobila and other specimens on the right side.

This material is deposited at the Museum of Natural History of Geneva (MHNG). Holotype MHNG 985.610, paratypes MHNG 985.611, other specimens MHNG 985.612-617.

Other studied material: *S. inhamata*, type material from Rietschel. MHNG 58/63–66.

DISCUSSION: The determination of the present material is complicated by the appearance of the scolex. The question is whether or not the observed apical structures should be considered as a rudimentary rostellum. In fact this structure, a compacted parenchyme which may be associated with glandular cells, is extremely difficult to observe (it can only be discerned with a Nomarsky contrast) and such a scolex could easily be considered as totally devoid of apical organization. In consequence, assuming the structure observed in our material is a rudimentary rostellum, it is important to distinguish it from small unarmed rostellums, muscular or glandular, but with well marked walls clearly distinguished from the surrounding parenchyme.

This material can be compared, among bird parasites[2], with the genera totally devoid of a rostellum such as *Arynchotaeniella* Schmidt, 1986 or *Woodlandia* Yamaguti, 1959 or with those harbouring a "rudimentary rostellum" like *Schmelzia* Yamaguti, 1959,

---

[1] Mean, range, standard deviation (sd) and number of observations (n). In µm if not specified otherwise.

[2] We will not discuss here the parasites of mammals. These cestodes, which are found in rodents, insectivors and bats, have been reviewed by MAS-COMA *et al.* (1980) and MAS-COMA (1982). Their specificity for a family or even a genus of hosts is recognised (VAUCHER 1971; MAS-COMA 1982).

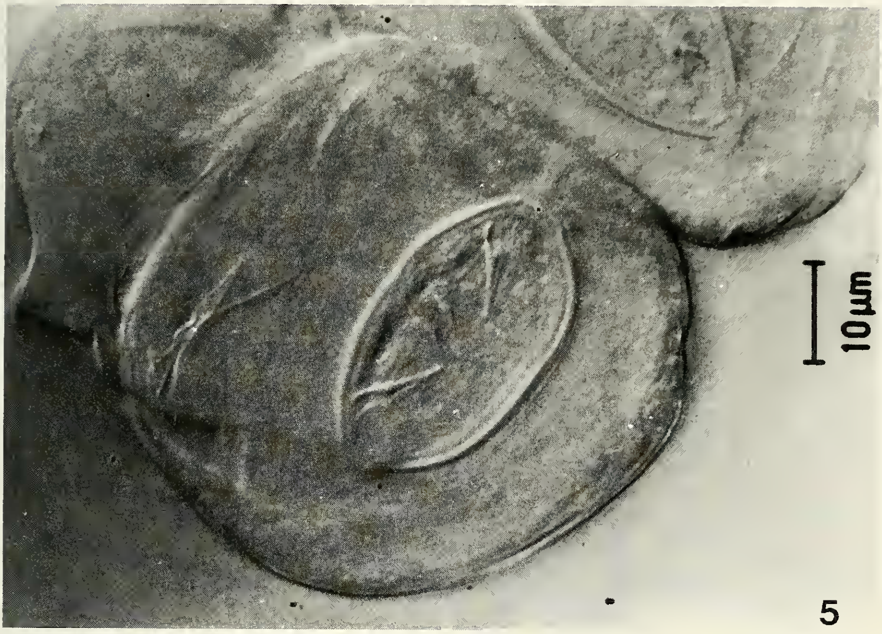


FIG. 5.
Staphylepis ambilateralis n.sp. Egg

Staphylepis Spassky & Oshmarin, 1954 and *Australiolepis* Spassky & Spasskaja, 1954 or *Hymenolepis* Weinland, 1858.

The first three of these genera are easily distinguishable from the present material by obvious characteristics, mainly at the level of the genital organs: presence of a sclerotized vaginal clamp in *Arynchotaeniella*, extravascular disposition of testes in *Woodlandia*, glandular structure of rostellum and peculiar egg membranes for *Schmelzia*. *Australiolepis* can also be differentiated by its clearly different rostellar structure, the position of its vitelline gland and testes. *Hymenolepis sensu lato*, has been used for numerous Hymenolepididae possessing three testes. *Sensu stricto* it is now restricted to a series of hymenolepidid cestodes without or with unarmed rudimentary rostellum (MAS-COMA *et al.* 1980, SCHMIDT 1986). Until now however all species of *Hymenolepis* are known from mammals, except *H. foveata* Meggitt, 1933 which has been found in a duck, but this species comes from a zoological garden and its description is extremely brief. The present material can be differentiated from *H. foveata* by its 700 µm long cirrus pouch (MEGGITT 1933).

In the hymenolepidid systematics, this material can only be placed in the genus *Staphylepis* which is at present the only one containing species similar to it. This genus was created by SPASSKY & OSHMARIN (1954) for *S. cantaniana* (Polonio, 1860), a parasite of Galliformes. Since this date five species have been added to *Staphylepis*, mainly by YAMAGUTI (1959). According to SCHMIDT (1986), they are: *S. cordobensis* (Jordano, 1952) in a pigeon from Spain, *S. infrequens* (Sharma, 1943) in a duck from Burma, *S. inhamata*

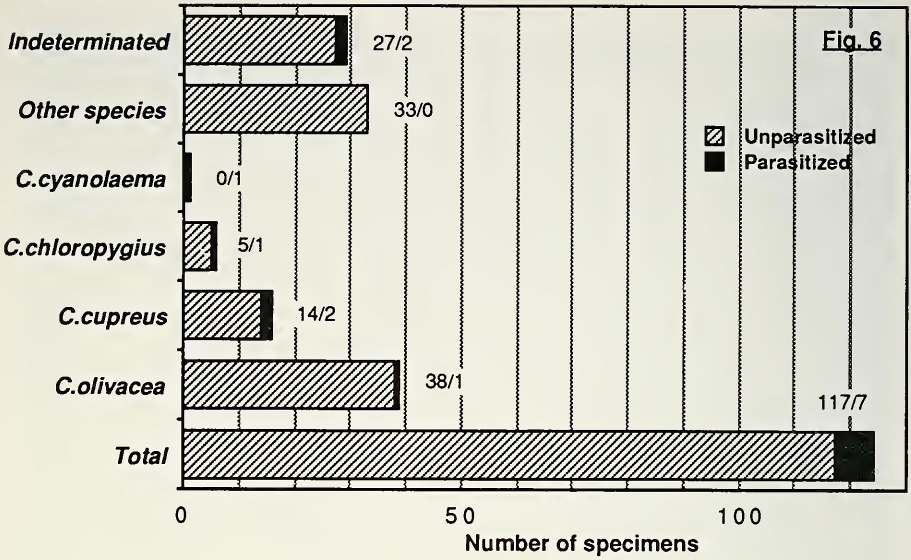


FIG. 6.

Prevalence of *Staphylepis ambilateralis* n.sp. in sunbirds of the Ivory Coast

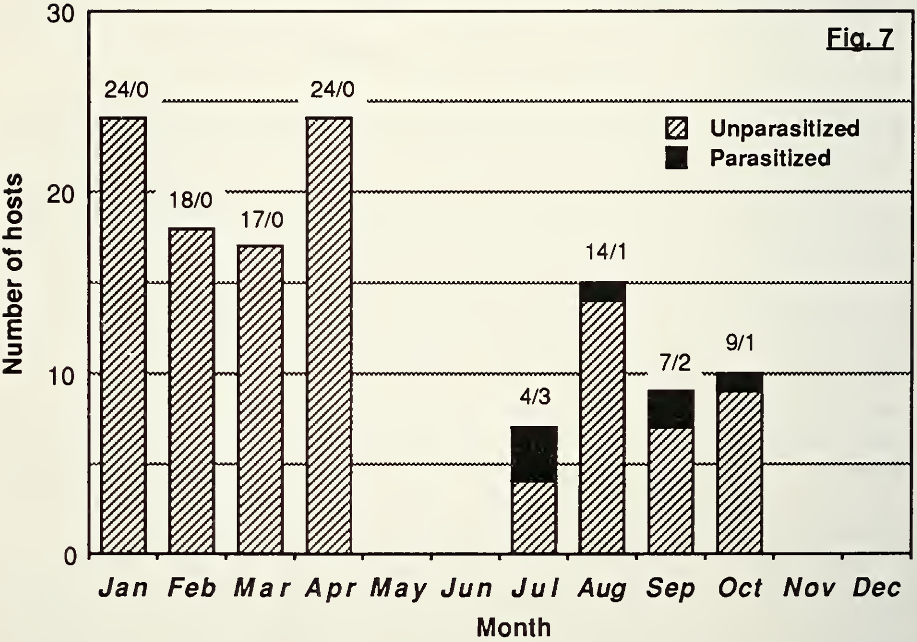


FIG. 7.

Seasonal variation of the prevalence of *Staphylepis ambilateralis* n.sp. in sunbirds of the Ivory Coast.

(Rietschel, 1934) in an hummingbird from Brazil, S. *lamellata* (Woodland, 1930) in a duck from London Zoo and S. *tonkinensis* (Joyeux & Baer, 1935) in a cuckoo from South-Eastern Asia.

Among them S. *inhamata* looks like our material but can be differentiated from it by an absence of a rudimentary rostellum (RIETSCHEL 1934 and personal observation) and by a shorter cirrus pouch [75x24 (65–85x18–29), n=10 (personal measurements)]. It is concluded that the present material must be considered as a new species and it is proposed to name it *Staphylepis ambilateralis* n.sp. It has to be acknowledged that the position of this species among the genus *Staphylepis* could be temporary. The diversity of both the hosts and geographical origins of the species listed above make the systematics of this group dubious and should lead to its revision.

It is worth noting that S. *inhamata* parasitizes Trochilidae (Hummingbirds) in South America. This convergence in the parasite fauna of vicariant host groups is interesting and surprising as it is well known that these two bird families are phylogenetically separated (SIBLEY *et al.* 1988).

As said above, Nectariniidae are poorly known from a parasitological point of view. An explanation could lie in the fact that both their prevalences (Fig. 6) and intensities are low. In our case furthermore, a seasonal variation seems to occur. Even if our data do not cover the whole year, all positive cases were recorded between July and October and not one between January and April (Fig. 7). Due to the diet and alimentary behavior of sunbirds (MACKWORTH-PRAED & GRANT 1973), it can be supposed that the intermediate host of S. *ambilateralis* is a small arthropod found in the corolla of flowers.

ACKNOWLEDGEMENTS

We thank Prof. A. Aeschlimann (Neuchâtel), Prof. S. Mas-Coma (Valencia) and Dr. P. Losel (Neuchâtel) for their support, Mr. O. Porgo (Abidjan) for his help in the field and the Authorities of the République de Côte-d'Ivoire for providing the permits.

This work was supported financially by the Swiss Academy of Sciences, the Foundation J. de Giacomi, the Roche African Research Foundation and the University of Neuchâtel.

RÉSUMÉ

Une nouvelle espèce, *Staphylepis ambilateralis* (Cestoda, Hymenolepididae) parasite de divers Nectariniidae en République de Côte-d'Ivoire est décrite. Cette espèce est principalement caractérisée par un scolex dépourvu de rostellum. De manière surprenante, S. *ambilateralis* est extrêmement proche de S. *inhamata* (Rietschel 1934) parasite de Trochilidae (colibris) sud-américains. S. *ambilateralis* n'est rencontré chez les souï-mangas qu'avec de très faibles intensités et prévalences. Il semble de plus avoir un cycle saisonnier avec un maximum de présence en été. Ces deux observations pourraient

contribuer à expliquer la pauvreté de la faune parasitaire connue chez cette famille d'hôte pour l'instant.

BIBLIOGRAPHY

Baylis, H.A. 1919. Some new Entozoa from Birds in Uganda. *Ann. Mag. nat. Hist.* 9: 457–466.

Burt, M.D.B. 1969. Cyclophyllidean Cestodes from Birds in Borneo. *Bull. Br. Mus. nat. Hist., Zoology* 17: 283–346.

Deardorff, T.L., G.D. Schmidt & R.E. Kuntz 1976. Tapeworms from Philippine birds, with three new species of *Raillietina (Raillietina). J. Helminth.* 50: 133–142.

— 1978. *Allohymenolepis palawanensis* sp. n. (Cyclophyllidea: Hymenolepididae) from the Philippine bird, *Nectarinia jugularis* (Tweeddale 1878). *J. Helminth.* 52: 211–213.

Hudson, J.R. 1934. A list of Cestodes known to occur in East African Mammals, Birds & Reptiles. *Jl E. Afr. Uganda nat. Hist. Soc.* 49–50: 205–217.

Mackworth-Praed, C.W. & C.H.B. Grant 1973. Birds of West Central and Western Africa. African Handbook of Birds. Ser. III, Vol. II. *Longman, London*: 818 pp.

Mariaux, J. & C. Vaucher 1988. *Pseudochoanotaenia eburnea* n.sp. (Cestoda: Cyclophyllidea) parasite de cinq espèces de *Cisticola* (Aves: Passeriformes) en République de Côte-d'Ivoire. *Revue suisse Zool.* 95: 249–256.

— 1990. A new genus of Dilepididae (Cestoda) of the yellowbill *Ceuthmochares aereus* (Cuculidae) from the Ivory coast. *J. Parasit.* 76: 22–26.

Mas-Coma, S. 1982. Helminthes de micromammifères. Spécificité, évolution et phylogénie des Cestodes Arostrilepididae Mas-Coma et Tenora, 1981 (Cyclophyllidea: Hymenolepidoidea). *Mém. Mus. Hist. nat. Paris, Nouvelle Série. A. Zoologie* 123: 185–194.

Mas-Coma, S., F. Tenora & J. Gallego 1980. Consideraciones sobre los Hymenolepididos inermes de roedores, con especial referencia a la problemática entorno a *Hymenolepis diminuta. Circular Farmacéutica* (Barcelona) 267: 137–152.

Meggitt, F.J. 1933. Cestodes obtained from animals dying in the Calcutta Zoological Gardens during 1931. *Rec. Indian Mus.* 35: 145–165.

Rietschel, P.E. 1934. Uber eine neue *Hymenolepis* aus einem Kolibri. Zugleich ein Beitrag zum Rechts-Links-Problem bei den Cestoden. *Zool. Anz.* 105: 113–123.

Schmidt, G.D. 1986. CRC Handbook of Tapeworm Identification. *CRC Press Inc., Boca Raton, Florida*: 675 pp.

Sibley, C.G., Ahlquist J.E. & Burt B.L. Jr. 1988. A classification of the living birds of the world based on DNA-DNA hybridization studies. *Auk* 105: 409–423.

Spassky, A.A. & P.G. Oshmarin 1954. [A new genus of hymenolepidids. *Staphylepis* gen nov. from domestic and wild gallinaceus birds] *Trudy gel'mint. Lab.* 7: 182–184. (in Russian).

Vaucher, C. 1971. Les cestodes parasites des Soricidae d'Europe. Etude anatomique, révision taxonomique et biologie. *Revue suisse Zool.* 78: 1–113.

Yamaguti, S. 1959. Systema Helminthum. Vol. II. Cestodes of Vertebrates. *Interscience Publ., New York*: 860 pp.